April 7, 2011

Ms. Katherine Hart, Chair
Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

Re: Irrigated Lands Regulatory Program Framework Comments

Dear Chairperson Hart and Board Members:

In America we hold a value that each of us must not foul downstream water supplies with our waste, just as we expect those upstream of us to do the same. The problem is, the proposed irrigated lands program falls short of this value and falls short of enforcing laws that require our waste to not degrade our neighbors' water or create a nuisance.

Some give praise to the program governing discharges from irrigated agricultural of polluted groundwater waste from the Grasslands Watershed Basin to the San Joaquin River. Since 1995, the San Luis Delta-Mendota Water Authority (SLDMWA) and United States Bureau of Reclamation (USBR) have been discharging polluted groundwater with high levels of selenium and other contaminants using the federal San Luis Drain for discharge to the San Joaquin River at levels lethal to fish and wildlife. Dilution flows downstream of the Merced River have been the method used to meet water standards downstream. From Mud Slough down to the Merced River, because of this discharge of polluted water, the river often has concentrations that exceed Clean Water Act standards. (See Figures 3-4).

The program where dischargers consolidate and concentrate these wastes toxic to fish and waterfowl, and then discharge them under a permit with some monitoring, is considered exemplary by the polluters. But it has relied on waivers of water quality rules and dilution to meet the law. (See Figure 1) Not enforcing water quality standards has its costs. But in this case the costs are passed along to others downstream. It is a case study of how irrigating toxic soils is proceeding largely unchecked, consolidating pollution and damaging downstream uses.

Selenium is a metalloid that can be very dangerous under some circumstances. Most significantly, it bio-accumulates in the food chain, concentrating as it moves up the food chain. This is what happened to Merced County cattle ranchers Jim and Karen Claus 30 years ago when selenium-tainted drainage water leaked from ponds at the Kesterson National Wildlife Refuge. The Claus's cattle,

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along with that of other nearby cattle ranchers, started getting sick and dying, after consuming the tainted drainage water and eating tainted grasses.

Kesterson was ordered cleaned up and closed as a public nuisance in 1985, yet for a quarter of a century, some Westside irrigation districts have been permitted to continue draining their selenium-laced waste waters directly to the San Joaquin River where it flows to the Delta.[1]

Monitoring the impacts of this essentially unregulated drainage has been sparse.[2] Chinook fry and splittail who feed in the San Joaquin River sloughs and floodplains and intermittent flooded wetlands are exposed to lethal doses. Bottom fish along with white and green sturgeon are particularly threatened as they feed on aquatic life that collects selenium and further concentrates the impacts in these fish. Dungeness crabs were recently added to the list. The lethal deformities in waterfowl and migratory birds at Kesterson and the Tulare Basin caused by selenium have been well documented.[3]

We know the costs of spreading this contamination in sloughs, wetlands, estuaries and slow moving water is costly to clean up (if that is even possible) and if the selenium buildup and accumulation cannot be halted the consequences may be catastrophic to the downstream biosphere. And yet, we continue with a regulatory program that transfers these dangers to downstream users, both human and wildlife.[4]

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[1] USFWS November 8, 2002 Exceedances of Water Quality Objective for Grassland Wetland Supply Channels. http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf & http://www.pcl.org/files/USGSDrainageMgmt.pdf pg 26.
Selenium removal from agricultural drainage from the western San Joaquin Valley is hampered by the large amounts of associated salt in any waste stream subjected to treatment. Extensive testing of technologies for removal of selenium from the water-column utilizing chemical and biological processes as part of the SJVDP achieved little operational success or cost-effectiveness (SJVDP, 1990c). Drainage treatment to remove selenium was not one of the strategies recommended by the SJDVP (1990a). In the *Preface* to the San Joaquin Valley Drainage Program final report (1990a), Edgar Imhoff, head of the program, wrote that "*..hopes for a master drain and expectations of a technological breakthrough in drainage water treatment are the reasons that the drainage problem has grown to nearly 500,000 acres and is adversely affecting the environment.*"

[2]See http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf

http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 26. ... "*monitoring was not sufficiently frequent to accurately characterize loads during variable flows.". . annual data are not available from individual farm-field sumps to help qualify source-area shallow groundwater conditions and determine long-term variability in selenium concentrations. . compliance monitoring sites are 50 and 130 miles downstream from the agricultural discharge. Pg 118-119.*

http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/Presser_etal_GBP_monitoring_plan_1996.pdf

[3] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 2.

[4] http://pubs.usgs.gov/fs/2004/3091/ U.S. Department of the Interior U.S. Geological Survey Fact Sheet 2004-3091 August 2004

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At the same time state and federal budgets are being cut.[5] The hodge podge of treatment methods to stop this discharge of selenium pollution to downstream neighbors is unlikely to succeed. Monitoring budgets are being cut. In February 2011, Central Valley Regional Water Quality staff announced they would no longer conduct monitoring for the project at 12 sites and Fish and Game representatives indicated they also would no longer conduct biological monitoring. The Bureau promises to pick up the costs and yet, the proposed draft monitoring program suggests significant cuts in both water quality and biological monitoring, despite promises to the contrary.[6] Compliance monitoring for loads is very different from monitoring for water contaminants, sediment movements and biological impacts both for aquatic and wildlife. Cutting the days, time periods and parameters *can render the analysis from the monitoring useless in terms of analyzing the impacts from the spread of this pollutant and the synergistic impacts with other contaminants.* Averages minimize the peak exposures which are often lethal and stay in the aquatic system long after the discharge recedes.[7]

Relying on load measurements is a misleading measurement for compliance with Clean Water Act standards and pollution controls.[8] For example over more than a ten-year life of the discharges from the Grasslands Watershed to the San Joaquin River from Mud Slough, U.S. Geological Survey scientists estimate a cumulative hazard of 6.6 Kestersons (ksts) as the cumulative hazard load.[9] Uncontrolled discharge of selenium-tainted groundwater and storm water exceeding protective standards is

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" The dry years and low flow seasons will be the ecological bottleneck (the times that will drive impacts) with regard to Se. Surf scoter, greater and lesser scaup, and white sturgeon are present in the estuary during the low flow season and leave before high flows subside. Animals preparing for reproduction, or for which early life stages develop in September through March, will be vulnerable."

[5] http://www.assembly.ca.gov/acs/committee/c26/hearings/03012011/030111%20hearing%20materials%20-%20fed%20program%20cuts.pdf

http://www.nwf.org/News-and-Magazines/Media-Center/News-by-Topic/General-NWF/2011/02-22-11-House-Continuing-Resolution-Passes.aspx

http://wwwrcamnl.wr.usgs.gov/tracel/references/pdf/Estuaries_v26n4Ap956.pdf

[6] Third Supplemental Declaration of Donald R. Glaser, CV-F-88-634-OWW/DLB, CV-F-91-048-OWW/DLB, Document 865 Filed 04/-1/11 Firebaugh Canal Water District et.al. v US at page 7

[7] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf
http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/selenium/fs.cfm
http://wwwrcamnl.wr.usgs.gov/Selenium/library.htm

[8] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 18 and 152.
"The selenium loads measured as the input to the system (drainage canals) are perpetually different from those measured as the outputs from the system (downstream in wetland sloughs or the San Joaquin River)" pg 153.

[9] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 119.

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permitted in wetland areas during periods of wet weather.[10] (See Figure 2) In periods of low flows selenium concentrations increase, but loads typically go down.[11]

Under the proposed irrigated lands regulatory program upstream selenium waste water stored in ground water aquifers in the Westlands subarea will measure only electrical conductivity and elevation.[12] Previous USGS and USBR studies show vast ground water areas with selenium contamination that exceeds hazardous waste levels. (See Figure 8) There is no requirement to monitor the spread of this pollution to downstream neighbors and to the San Joaquin River where eventually it accumulates in the Delta estuary, sloughs, wetlands, and temporal floodplains. State and federal scientists predict this pollution from irrigated agriculture unless halted, will harm beneficial use.[13] Mobilization of selenium by irrigation and contamination of ground water has resulted in concentrations of groundwater greater than hazardous waste levels. (See Figure 8) This pollution violates federal (40 CFR 131.12) and state anti-degradation regulations.[14] Under worse case scenarios government scientists conclude that selenium contamination could create an ecological crisis in the Bay-Delta similar to that created at Kesterson National Wildlife Refuge in the 1980s.[15]

Scientists and water board staff estimate that more than 85% of the pollutant loads of selenium in the San Joaquin River that reach the Delta Estuary are from the west side irrigators.[16] They estimate the daily discharges of selenium to the Delta Estuary from the San Joaquin River is 10 to 30 times the combined total of selenium discharges from the combined Sacramento River sources and the Bay Area oil refineries.[17]

Selenium is also being exported to southern California's water supplies through the California Aqueduct threatening drinking water quality and likely is accumulating in fish and reservoirs in Southern California as a result.[18]

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[10] Ibid pg 17.

[11] Ibid pg 70-90.
"During the first two years of the project, loads were above load targets. It is notable that drain water discharged to the San Joaquin River through the San Luis Drain is more consistently concentrated than were historic discharges to the wetlands channels system." pg 121

[12] See proposed Waste Discharge Requirements for Westlands Water District &
Ibid. pg 25.

[13] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 15& 25.
http://www.pcl.org/files/USGSDrainageMgmt.pdf

[14] Ibid pg 14.

[15] Ibid. pg 18.

[16] http://esd.lbl.gov/files/about/staff/nigelquinn/comp_model.pdf
see also http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/sjr9900.pdf

[17] http://pubs.usgs.gov/of/2000/ofr00-416/#pdf ; pp 1-2.

[18] http://calitics.com/tag/Selenium Napolitano, Garamendi, et al., November 26, 2010.

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Do we have enough water in California to continue to pollute it and expect dilution to meet clean water standards while clean up costs are passed on to downstream users? No. It is time to clean up the source of the pollution and enforce the law. It is time to enforce the law, including the State Board 1985 Kesterson cleanup or, WQ 85-1, which addressed San Joaquin River drainage pollution. Clean Water Act standards and state laws designed to protect water quality from unreasonable use, nuisance, and degradation need to be enforced. The proposed Irrigated Lands Regulatory program falls short of protecting water supplies and the public from contamination caused by irrigated agriculture.

Thank you for the opportunity to comment. Attached are the charts and figures referenced herein.

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Attachments Charts and Slides 1-9.

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Selenium Contamination of Groundwater & Surface Waters:

A case history in the failure to enforce water quality standards

Irrigated Lands Framework
Agenda Item #7
April 7, 2011

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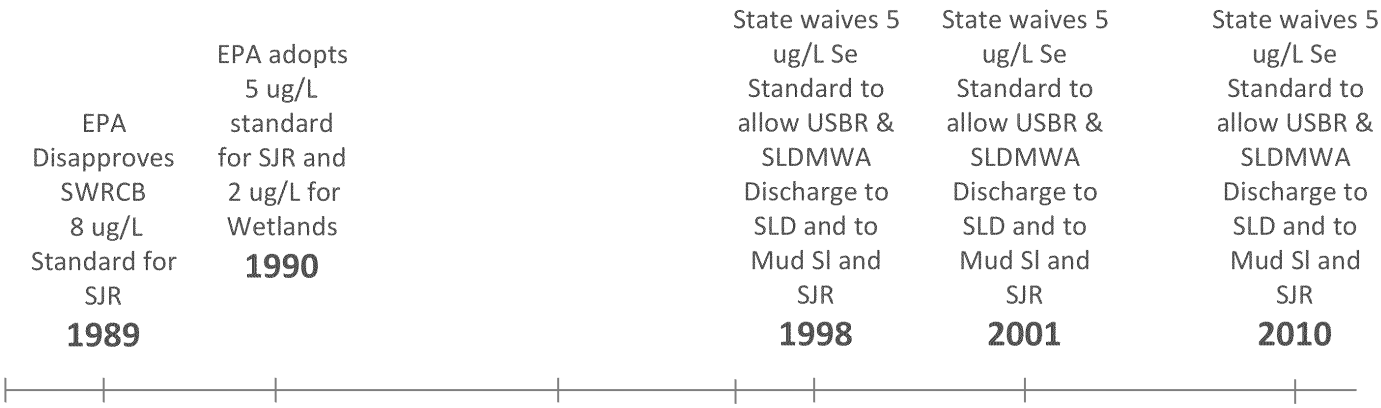
Permit History for Selenium Discharges From Grasslands Basin to Mud Slough and San Joaquin River:

A Case History in the Failure to Enforce Water Quality Standards



1987
NPDES: USBR Reopens SLD to Mud Sl and SJR

1990
NPDES: USBR GW Seepage to SLD and to Mud Sl and SJR

1995
SLDMWA Unpermitted discharge to SLD and to Mud Sl and SJR

1996
NPDES: USBR & SLDMWA GW&Subsurface Drainage to SLD and to Mud Sl and SJR

SLDMWA-San Luis Delta Mendota Water Authority
USBR- United States Bureau of Reclamation
SLD- San Luis Drain
Mud Sl-Mud Slough
SJR-San Joaquin River

Figure 1

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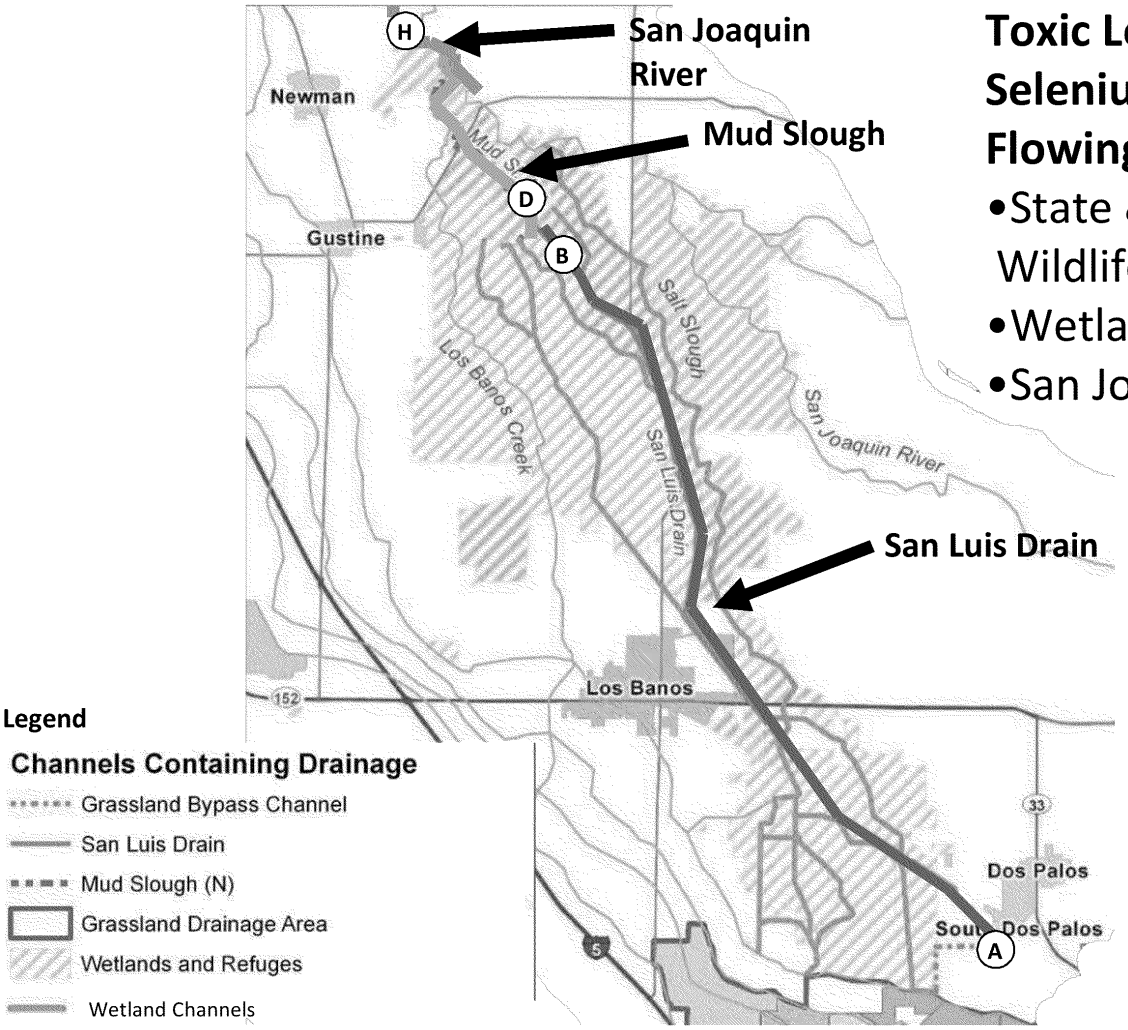

Toxic Levels of Selenium Flowing Through:

- State & Federal Wildlife Refuges
- Wetlands
- San Joaquin River

Figure 2

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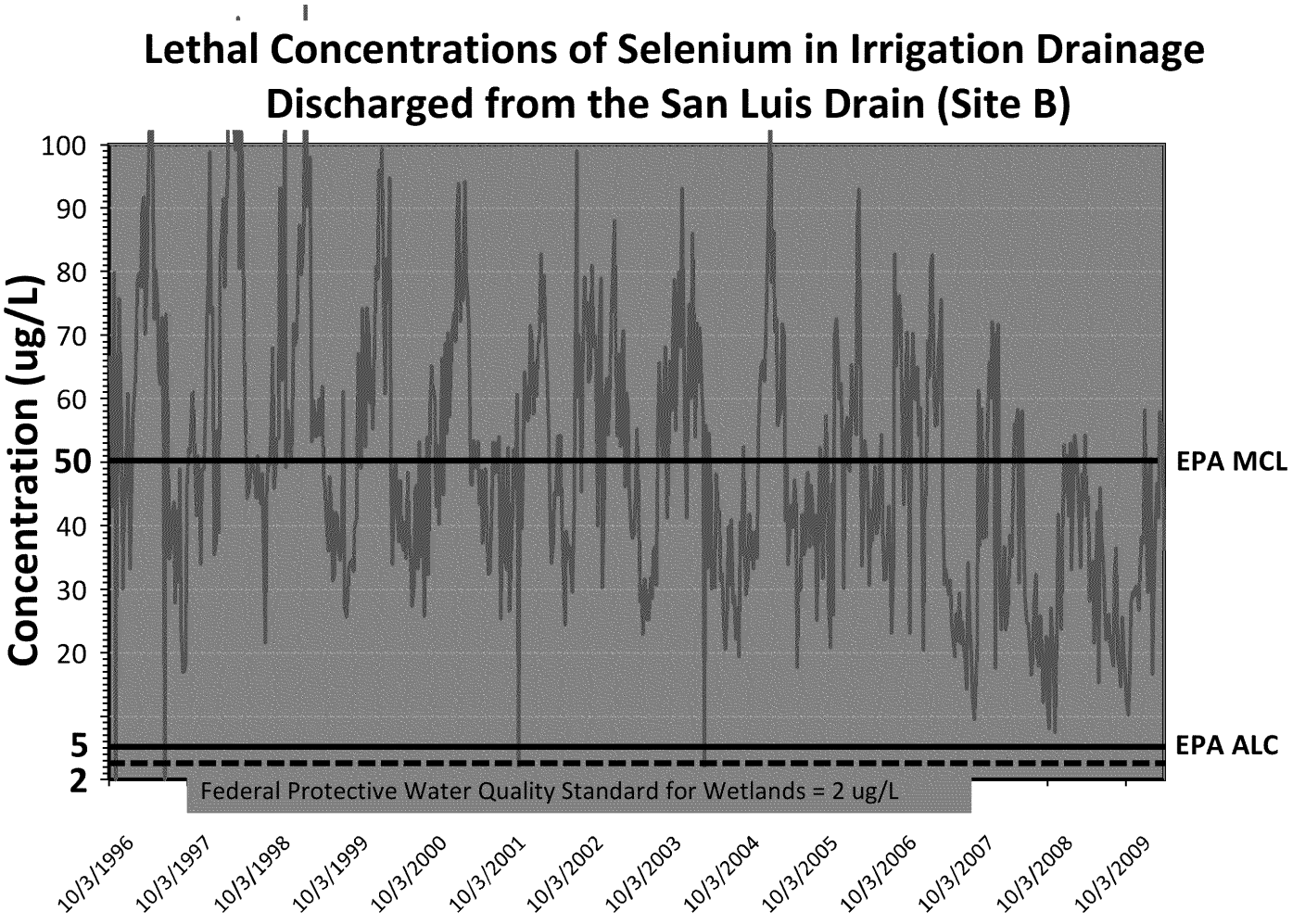

Figure 3

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

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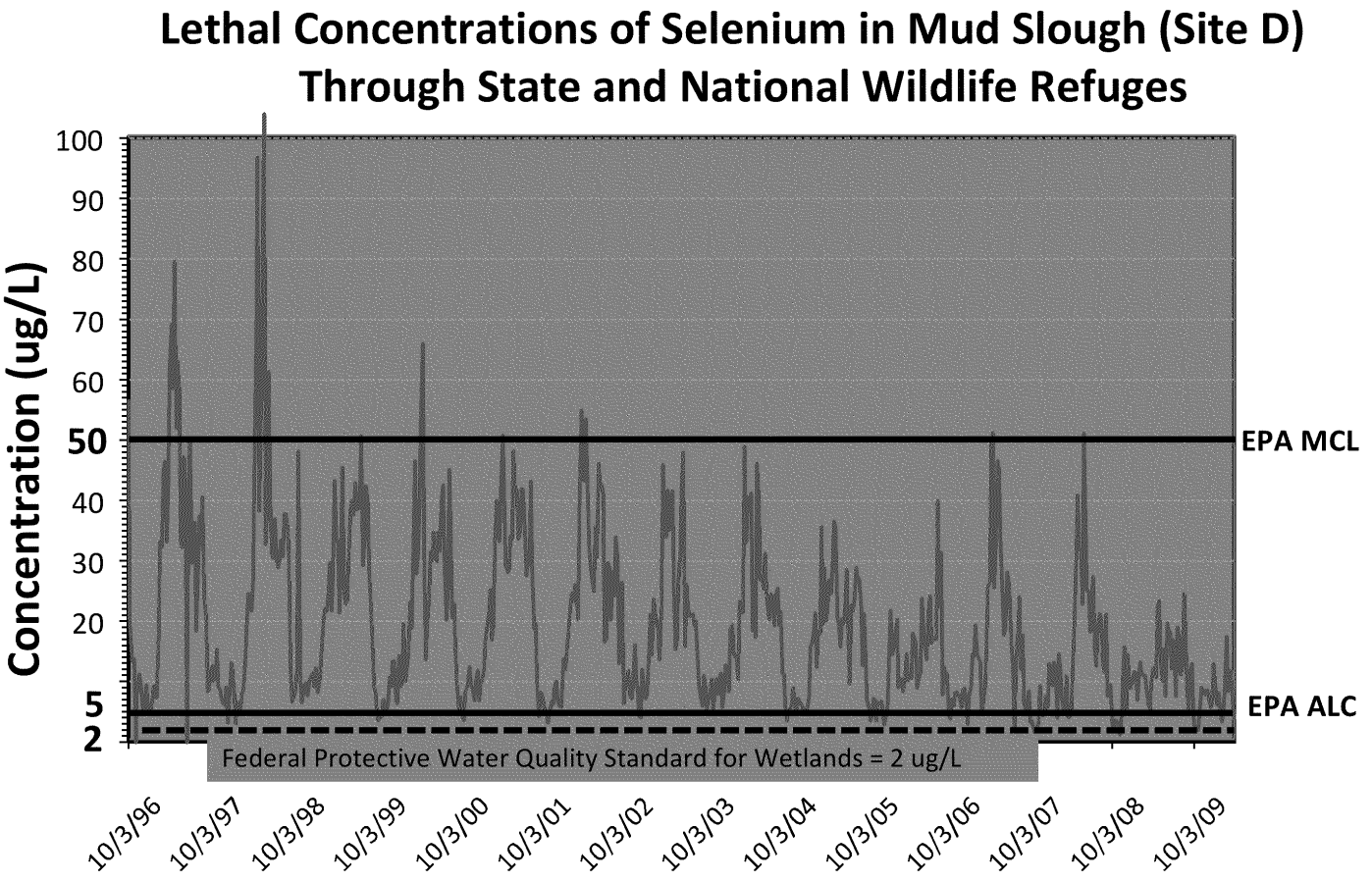

Figure 4

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

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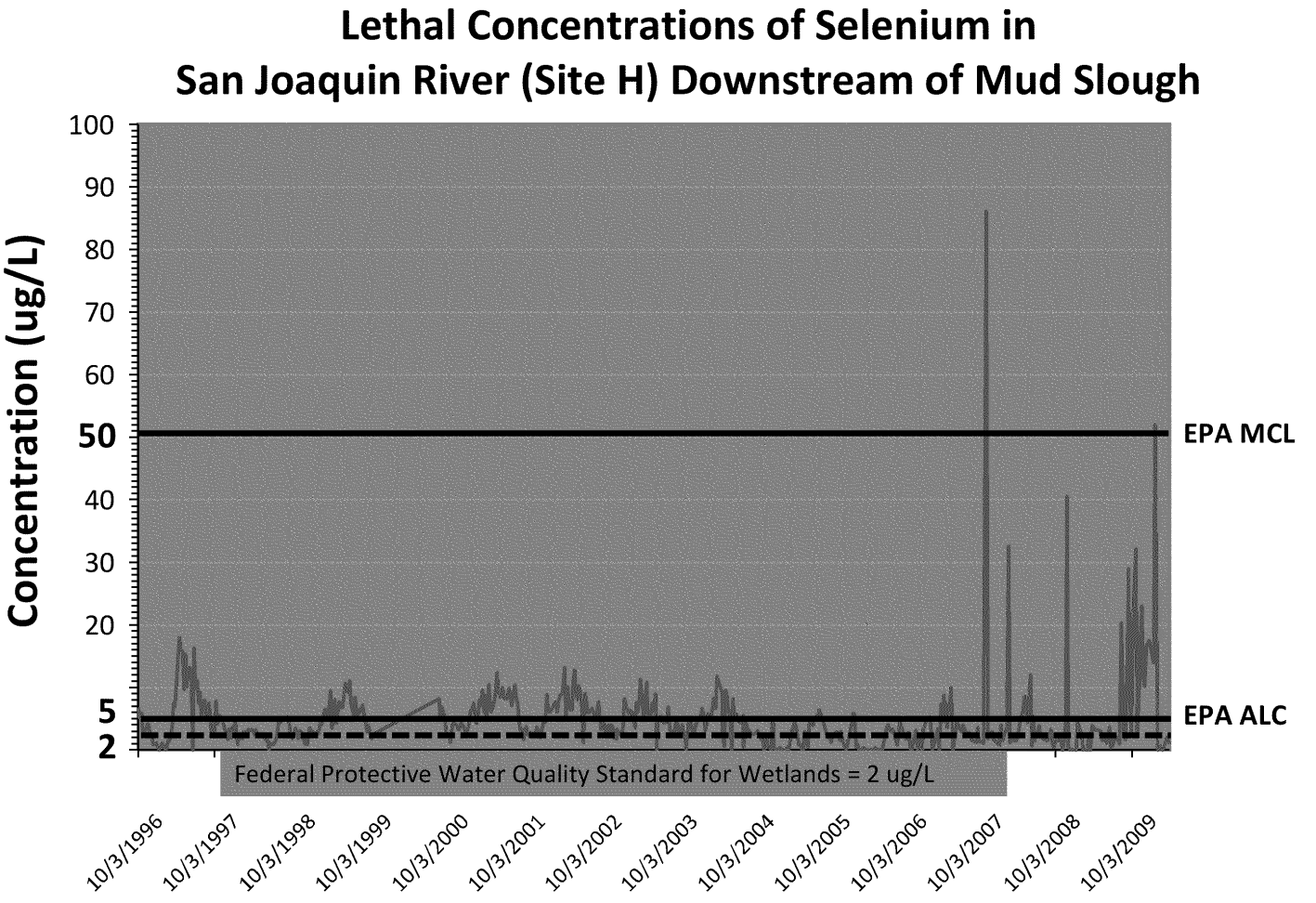

Figure 5

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

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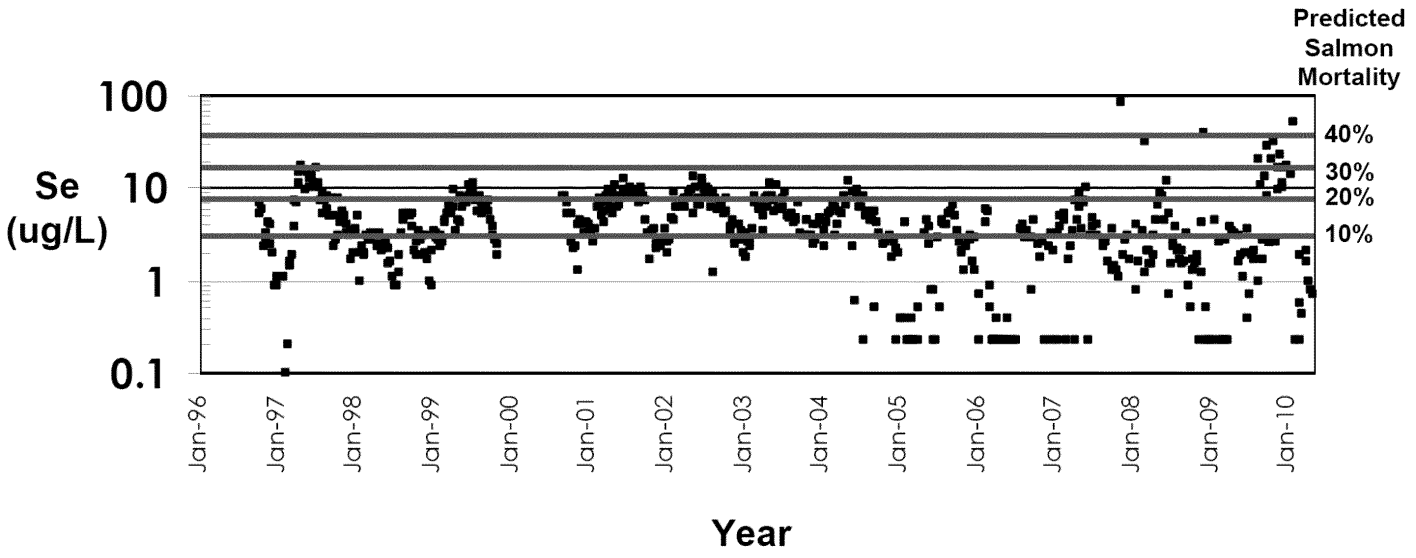
Selenium Levels in the San Joaquin River are not Safe for Salmon



Selenium concentrations measured in the San Joaquin River at Hills Ferry (data from the U.S. Bureau of Reclamation)

Figure 6

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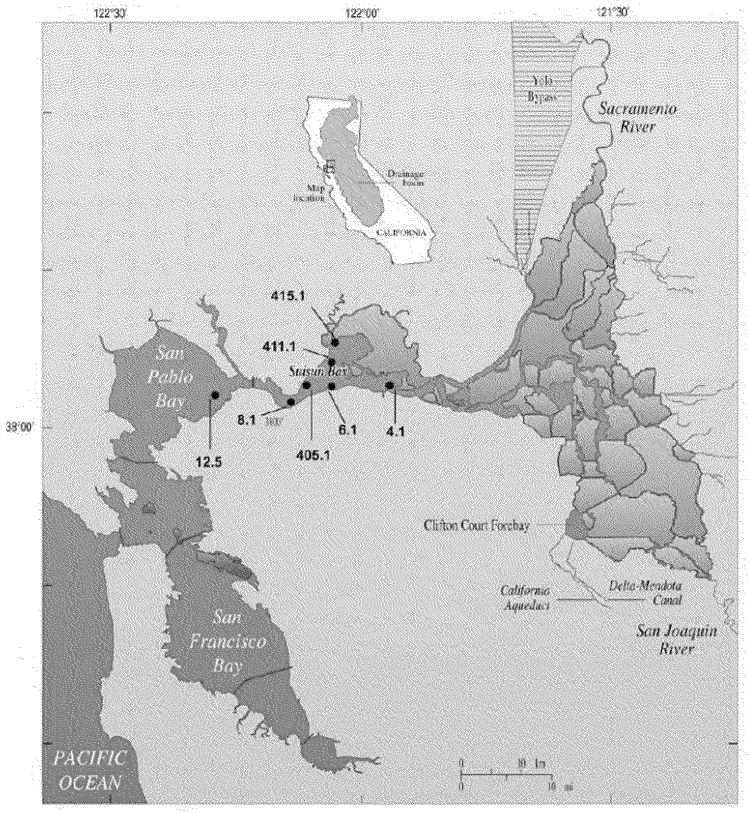
Selenium Impacts in Bay-Delta



Unsafe levels of Selenium concentrations found in Suisun Bay and Northern San Francisco Bay.
(2 to 22 ppb)*

Selenium loads per day from Westside irrigators contribute approximately 10 to 30 times daily selenium load compared to the Sacramento and Oil refineries combined.**

* Kleckner, A.E., Stewart, A.R., Elrick, K., and Luoma, S.N., 2010, Selenium and stable isotopes of carbon and nitrogen in the benthic clam Corbula amurensis from Northern San Francisco Bay, California: May 1995b
** http://pubs.usgs.gov/pp/p1646/

Figure 7

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Imported irrigation leaches selenium and moves it into aquifers and surface waters. Unregulated and unmonitored, highly toxic Selenium-laden wastewater is being stored in aquifers harming beneficial uses.

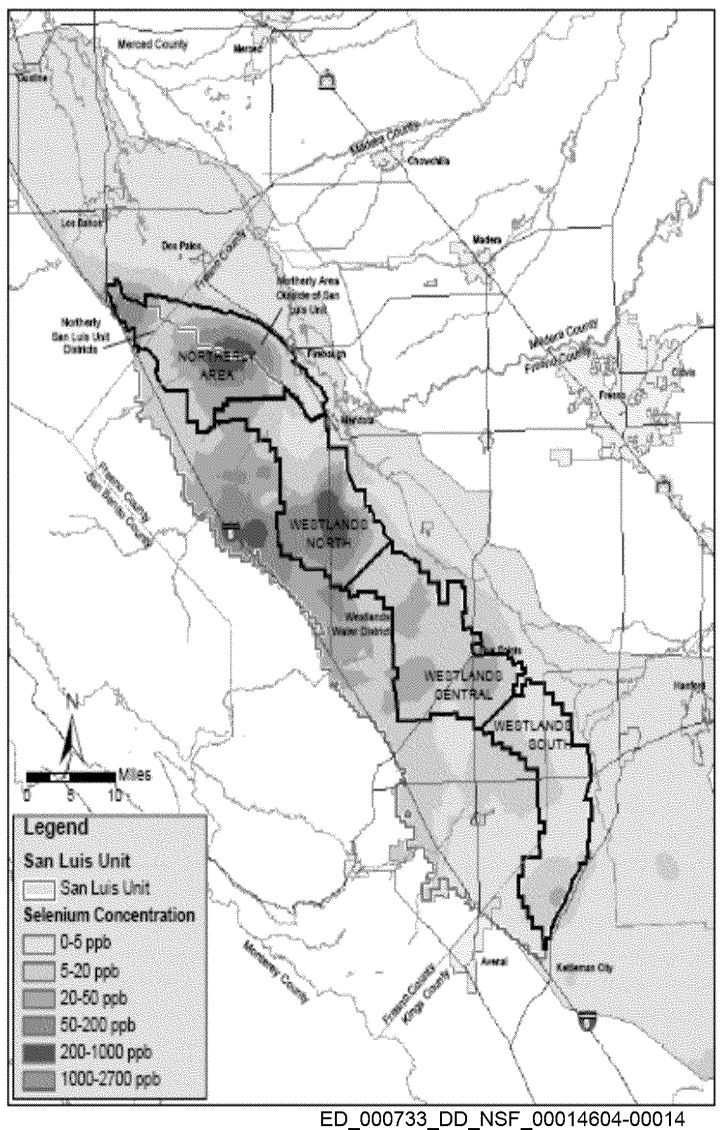

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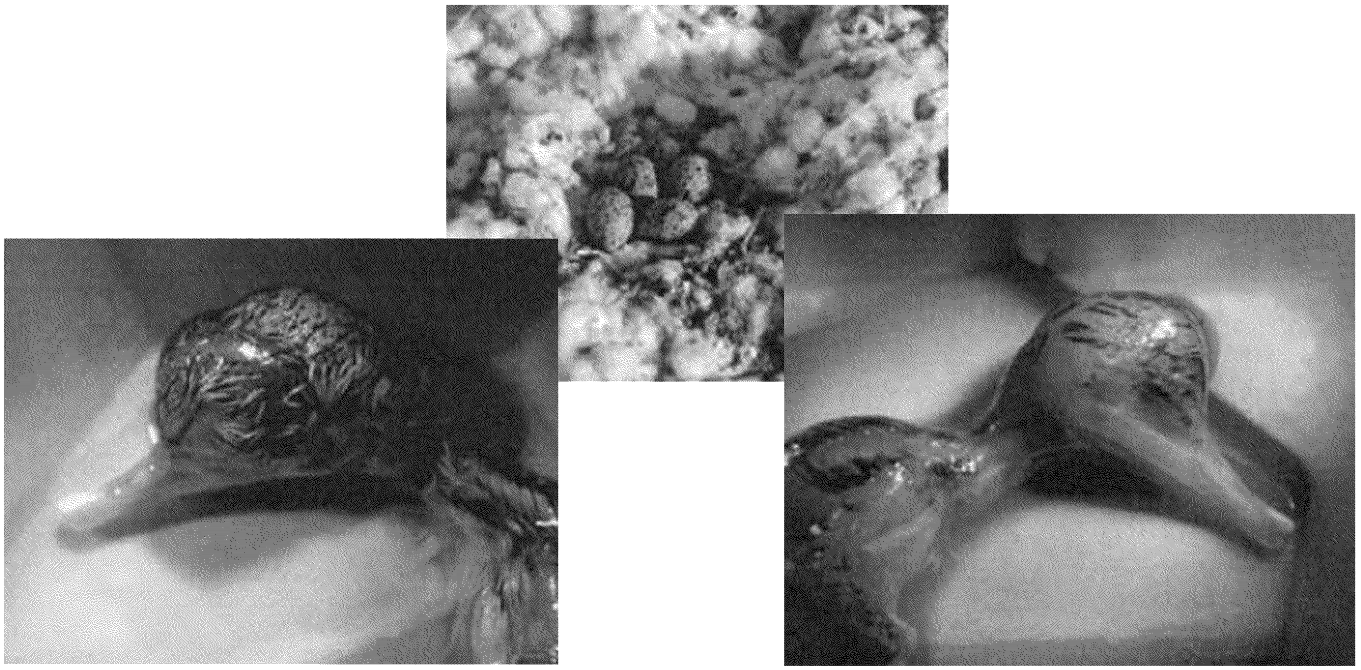
Figure 8

Ecological Threat

Don’t repeat the problems found in the San Joaquin Valley in the Delta

2003 CVRWQCB Measured 1480 ppb Selenium in Shallow Groundwater Near Five Points CA.



2003 University of California Salinity Drainage Program Annual Conference: Drainage Solutions, Joseph Skorupa, U.S. Fish and Wildlife Service Available at: http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/joepond.pdf

Figure 9

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